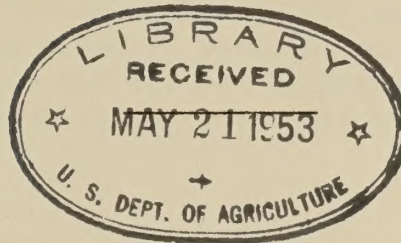


M I C H I G A N 2 0 D E L T A

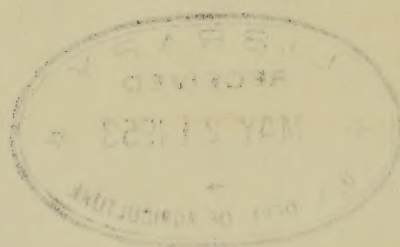
FIELD APPRAISAL ANALYSIS



Prepared by
Field Appraisal Section
Program Analysis Division
RURAL ELECTRIFICATION ADMINISTRATION

Field Appraisal
Completed in
February 1953

*



April 6, 1953

Field Appraisal Section
Program Analysis DivisionSUMMARY AND CONCLUSION
MICHIGAN 20 DELTAAREA CHARACTERISTICS

The most important product of farms in the system area is milk. Some is marketed for consumption as fluid milk by local town residences. The remainder is processed by condensaries and cheese factories. Subsistence farms supply logs for paper mills and veneer plants located in the area. The average gross income per farm in 1949 was about \$2,300, as compared to the State average of \$3,000. Land in farms decreased approximately 43,000 acres between 1945 and 1950. Clearing of additional suitable farm land is now in process and this will increase the size of farm units. Population has remained constant between 1945 and 1950. Ninety percent of the farms reported having electricity, and 29 percent telephone service in 1950. Pleasure seekers from Michigan, Wisconsin, and as far south as Toledo, Ohio, use this service area for hunting, fishing, and summer vacations. Large deposits of taconite are located in Marquette County and feasible methods of mining have been perfected. This will contribute to the Nation's steel supply.

ULTIMATE NUMBER OF CONSUMERS

On January 31, 1953, this system was serving 2,404 consumers. An unelectrified survey indicated that 2,815 potential farm, nonfarm, commercial, and seasonal consumers exist in the service area. This appraisal indicates a similar condition to exist. Acquisition of the Upper Michigan Power and Light Company would add an additional 2,375 (December 31, 1951, estimate) served consumers.

ESTIMATED FUTURE CONSUMPTION OF ELECTRICITY

Farm consumers have been using 73 percent of average kwh consumption for the United States, as determined by REA for electrical appliances and equipment. Nonfarm consumers have been using 83 percent of the average rate. The Upper Michigan Power and Light Company farm consumers have been using 64 percent, nonfarm consumers 80 percent, and the town residential consumers 73 percent of the average. The increased kwh consumption for the cooperative during the next 3 years will be principally from water heaters, cabinet freezers, ranges, and milk coolers. For the acquisition the increase will be principally from water heaters, ranges, cabinet freezers, television receivers, and milk coolers. Forty-seven percent of the cooperative's consumers and 46 percent of the acquisition consumers are using and plan on using LP gas in the future.

Based on factors believed to be significant, this analysis leads to the following average monthly estimates which are certified as being reasonable and may be expected to be attained by the years specified:

2-Summary - Michigan 20 Delta - April 6, 1953

<u>Class of Consumer</u>	<u>Calendar Year</u>			
	<u>1952</u>	<u>1955</u>	<u>1958</u>	<u>1963</u>
<u>Michigan 20 Delta</u>				
Farm	146	165	195	250
Nonfarm Residential	84	100	125	160
Seasonal	34	40	50	60
Small Commercial	279	340	375	400
Public Buildings	—	65	75	100
Street Lighting	291	310	350	400
Large Power (annual)				
Playground Equipment Co.	(new)	400,000	400,000	500,000

	<u>Calendar Year</u>			
	<u>1951</u>			
<u>Upper Michigan Power & Light Co.</u>				
Farm	196	235	290	360
Nonfarm Residential	147	175	210	260
Town Residential	146	185	225	285
Seasonal	29	40	50	60
Small Commercial	462	475	500	550
Public Buildings	207	225	250	275
Street Lighting	265	310	350	400

	<u>Calendar Year</u>			
	<u>1952</u>			
<u>Large Power (annual)</u>				
Rapid River School (Vocational)	17,411	18,500	19,000	19,500
Swallow Inn (Summer Camp)	16,442	16,500	16,500	16,500
Rapid River Creamery	19,329	19,500	19,500	19,500
Stone Anderson (Sawmill)	28,360	36,500	36,500	36,500
Turan & Proehl (Sawmill)	20,520	20,500	20,500	20,500
Rapid River Street Lighting	29,620	30,100	30,600	31,000
Ed. Wesun Hotel	34,770	35,000	35,500	36,000
Escanaba Mink and Fur Farm	38,397	40,000	41,000	42,000
Leslie Smith Mink Farm	15,281	15,500	16,000	16,500
Bernard Broderson (Sawmill)	12,400	12,500	13,000	14,000
John Listle (Sawmill)	9,539	10,000	10,500	11,000
Julius Flath (Night Club)	29,709	30,000	30,500	31,000
Clarence Sandquist (Dairy)	14,180	14,000	14,500	15,000
Study Bros. (Mink Farm)	27,531	27,500	28,000	28,500
Albin S. Pearson, Sr. (Mink Farm)	9,192	10,500	11,000	11,500
Night Club (Potential)	—	15,500	16,000	16,500
" " "	—	—	16,000	16,500
Arbor Box Co.	8,110	13,600	14,000	14,500
Delta County Garage	19,723	20,000	20,500	21,000
Escanaba Concrete Corp. (Wet Mix)	5,207	5,400	6,000	6,500

3-Summary - Michigan 20 Delta - April 6, 1953

<u>Class of Consumer</u>	<u>Calendar Year</u>			
	<u>1952</u>	<u>1955</u>	<u>1958</u>	<u>1963</u>
George & E. Keldsen (Night Club)	29,560	29,500	30,000	30,500
Escanaba & Lake Superior Shops R.R.	32,210	35,000	35,000	35,000
Shepick Dimension Co. (Sawmill)	429,120	430,000	431,000	435,000
Escanaba Coal & Dock Co.	216,083	216,000	217,000	220,000
Delta Fox and Mink Farm	12,730	12,700	12,800	13,000
William Oja, Jr. (Sawmill)	3,552	8,000	9,000	10,000
U. P. Concrete Pipe Co.	22,106	27,000	28,000	30,000
Frank Wawiska Mink Farm	12,594	12,500	13,000	13,500
Joe Whitney Mink Farm	25,303	25,500	30,000	35,500
Terrace Gardens (Night Club)	37,392	37,500	38,000	38,500

E. C. Weitzell, Chief
Program Analysis Division

April 6, 1953

Field Appraisal Section
Program Analysis Division

ANALYSIS OF BASIC FACTORS RELATED TO THE
RURAL ELECTRIFICATION LOAN FOR
MICHIGAN 20 DELTA

This is an analysis of the probable future consumption of electricity for the Alger-Delta Cooperative Electric Association. The headquarters for this association is located in Gladstone, Michigan. The analysis includes probable kwh usage for the proposed acquisition (Upper Michigan Power and Light Company, Inc., Escanaba, Michigan). The basic data were secured through a field study of Menominee, Alger, Delta, Schoolcraft, and Marquette Counties, Michigan. The field appraisal and the analysis were completed by Earl A. Gardner, Agricultural Economist. Visits were made to 26 served farm consumers, 30 served nonfarm consumers, 15 served seasonal consumers, 22 potential farm consumers, and 24 potential nonfarm consumers of the Alger-Delta Cooperative Electric Association. In addition, visits were made to 29 served farm consumers, 26 served nonfarm consumers, and 30 served residential consumers of the Upper Michigan Power and Light Company, Inc.^{1/} Historical consumption data were obtained on 15 served seasonal consumers of the cooperative. Local businessmen and agricultural leaders, within the five counties, were consulted as to economic trends and their estimate of the future for the area with respect to the use of electric power. A map of the ultimate boundary of the service area is shown as Figure 1.

ULTIMATE NUMBER OF CONSUMERS

As of January 31, 1953, this system was serving 2,404 consumers. The manager estimates that 2,815 potential farm, nonfarm, commercial and seasonal consumers exist in the service area (Figure 2). Acquisition of the Upper Michigan Power and Light Company would add an additional 2,375 (December 31, 1951, estimate) served consumers. Maps were furnished the appraiser by the Alger-Delta Cooperative that showed the location of the potential consumers. The nature of these potentials was evaluated while traveling throughout the service area. A systematic random sample of the potential farm consumers indicated 25 abandoned farmsteads and 25 not interested in having electricity. Of the potential nonfarm consumers, the random sample indicated 22 abandoned and 22 potential consumers not interested in having electricity. The ultimate number of seasonal consumers apparently was based on the number of potentials presently existing in the area. Many of the potential seasonal consumers had cabins which appeared to have been constructed within the last 2 to 5 years. It is reasonable to expect that the number of potential seasonal consumers ultimately will be in excess of the manager's estimate. It is the appraiser's opinion that over-all, the manager's estimate of the ultimate number of potential consumers is reasonable.

^{1/} Respondents selected constituted a random sample from tabular lists that included approximately 3 percent of the consumer units in the system area.

Michigan 20 Delta - April 6, 1953

NATURE OF PRESENT AND INDICATED FUTURE CONSUMPTION
OF ELECTRICITY AS REVEALED BY THE SURVEY

A tabulation of the raw data secured from the respondents revealed the following average monthly consumption figures:

TABLE I
INDICATED MONTHLY KWH CONSUMPTION

Class of Consumer	Actual Consumption Calendar Year 1952	Increase in 3 Years ^{1/} (Percent)	Total Indicated Consumption Within 3 Years
<u>Alger-Delta Cooperative</u>			
1. Served			
a. Farm Consumers	146	51	220
b. Nonfarm Residential Consumers	84	54	129
c. Seasonal Consumers	34	32	45
2. Potential			
a. Farm Consumers	--	--	185
b. Nonfarm Residential Consumers	--	--	103
c. Seasonal Consumers	--	--	45 ^{2/}
<u>Upper Michigan Power and Light</u>			
1. Served			
a. Farm Consumers	196 ^{2/}	44	282
b. Nonfarm Residential Consumers	147 ^{2/}	36	200
c. Residential Consumers	146 ^{2/}	50	219
d. Seasonal Consumers	29	32	38

^{1/} Computed as the increase indicated by respondents to be attained in 3 years.

^{2/} Estimated. Based on actual consumption of consumers interviewed.

^{3/} Based on existing seasonal consumer estimates, 3 years after connected.

Historical consumption records for consumers in the survey for the Alger-Delta Cooperative indicated a generally rising average consumption. Also, consumers added in recent years appear to have attained initial averages higher than consumers connected over the longer period. This is revealed in the following two tables:

Michigan 20 Delta - April 6, 1953

TABLE II

AVERAGE MONTHLY KWH CONSUMPTION OF 26 FARM CONSUMERS
AS SHOWN BY THEIR BILLING RECORDS

Total Number Years With Electricity	Number of Schedules	Average Kwh Consumption Per Month													
		1939	'40	'41	'42	'43	'44	'45	'46	'47	'48	'49	'50	'51	'52
14	3	38	39	40	32	20	25	32	37	45	48	45	45	54	60
13	3	--	34	54	50	55	63	74	88	93	102	119	119	121	136
12	6	--	--	105	117	120	146	164	179	220	266	276	289	243	261
11	2	--	--	--	34	50	55	74	65	77	83	89	91	80	86
10	1	--	--	--	--	400	162	146	126	196	146	118	94	108	126
9	2	--	--	--	--	--	40	48	53	67	74	66	74	89	135
8	1	--	--	--	--	--	--	95	51	38	61	44	57	61	59
7	1	--	--	--	--	--	--	--	26	27	66	35	30	37	30
6	5	--	--	--	--	--	--	--	--	120	93	98	106	115	163
5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	1	--	--	--	--	--	--	--	--	--	--	--	--	74	116
1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	72
Weighted Average		38	36	76	68	88	88	99	99	120	129	131	136	127	147

TABLE III

AVERAGE MONTHLY KWH CONSUMPTION OF 30 NONFARM
CONSUMERS AS SHOWN BY THEIR BILLING RECORDS

Total Number Years With Electricity	Number of Schedules	Average Kwh Consumption Per Month													
		1939	'40	'41	'42	'43	'44	'45	'46	'47	'48	'49	'50	'51	'52
14	2	35	34	46	39	30	35	37	44	45	38	38	41	58	53
13	1	--	32	36	65	--	49	61	104	96	116	165	155	155	150
12	3	--	--	48	54	33	36	43	50	44	39	47	69	104	97
11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8	1	--	--	--	--	--	--	19	18	33	32	34	29	63	110
7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6	4	--	--	--	--	--	--	--	--	43	49	55	59	87	94
5	2	--	--	--	--	--	--	--	--	--	73	118	217	118	108
4	1	--	--	--	--	--	--	--	--	--	--	52	76	61	62
3	7	--	--	--	--	--	--	--	--	--	--	--	83	164	196
2	5	--	--	--	--	--	--	--	--	--	--	--	--	74	96
1	4	--	--	--	--	--	--	--	--	--	--	--	--	--	116
Weighted Average		35	33	45	51	31	38	40	51	48	53	66	86	80	121

Michigan 20 Delta - April 6, 1953

Table IV reveals the saturation of electrical appliances and equipment, measured in terms of the number of appliances per 100 consumers that are presently in use and indicated to be added in 3 years, for the various classes of consumers considered in this analysis.

TABLE IV
PRESENT AND INDICATED PERCENT SATURATION OF
ELECTRICAL APPLIANCES AND EQUIPMENT FOR
CONSUMERS AND POTENTIAL CONSUMERS

Appliance or Equipment	Alger-Delta Consumers		Upper Michigan Consumers		Alger-Delta Potential Consumers
	Presently Using	Indicated Future Use	Presently Using	Indicated Future Use	Indicated Future Use
Air Compressor	5	5	4	5	5
Animal Clippers	7	7	2	2	--
Barn Cleaner	2	2	--	--	--
Battery Charger	5	5	2	2	3
Blanket	--	2	1	2	--
Broiler	7	7	1	1	--
Brooder Battery	--	--	1	1	--
Brooder, Hover	5	9	4	4	5
Cabins on Lake	--	--	--	2	--
Cement Mixer	2	2	--	--	--
Clock	52	55	58	58	18
Clothes Drier	--	11	5	5	3
Coal Stoker	4	4	4	4	3
Cream Separator	--	--	1	1	3
Drier, Hay	--	4	1	1	--
Drill Press	23	25	25	26	18
Elevator, Grain	4	4	1	1	--
Elevator, Rough	4	4	1	4	--
Fan, Household	11	14	15	16	11
Fan, Central Hot Air	11	14	9	10	3
Fan, Exhaust Kitchen	4	4	1	4	--
Feed Chopper	2	2	1	2	--
Fence	11	11	15	15	--
Food Mixer	45	54	59	65	34
Freezer (Cabinet)	14	32	14	32	13
Freezer (Walk-in)	--	--	2	4	3
Fryer (Deep Fat)	--	--	5	5	--
Germicidal Lamp	2	2	2	2	--
Grill (Sandwich)	4	4	1	1	--
Garden Watering	--	--	2	2	--
Heating Pad	21	21	35	36	11

2-Table IV - Michigan 20 Delta - April 6, 1953

Appliance or Equipment	Alger-Delta Consumers		Upper Michigan Consumers		Alger-Delta Potential Consumers
	Presently Using	Indicated Future Use	Presently Using	Indicated Future Use	Indicated Future Use
Headbolt Heater	--	--	--	1	--
Hot Plate	29	29	26	26	13
Iron	98	98	96	98	76
Ironer	2	2	4	4	--
Joiner	--	--	2	2	--
Jig Saw	2	4	--	--	3
Lathe	4	4	1	1	5
Lighting					
Bath House	5	5	2	2	--
Dairy Barn	27	27	28	29	13
Fruit Packing House	7	7	--	--	--
Garage	20	21	27	33	21
General Barn	10	14	8	8	21
Grain Storage Building	16	16	2	2	3
Hog Barn	2	2	--	--	--
House	100	100	100	100	100
Milk House	--	4	15	15	--
Other Buildings	9	14	9	9	5
Poultry Brooder House	7	11	2	2	--
Poultry Laying House	14	23	15	19	16
Shop	--	4	9	12	11
Yard	54	57	56	62	37
Livestock Watering	30	32	25	26	3
Milk Cooler	2	7	4	9	3
Milking Machine	16	23	20	24	5
Milk Pasteurizer	4	5	1	1	3
Oil Furnace	2	4	8	10	3
Percolator	23	25	26	26	18
Pig Brooder	2	2	--	--	--
Planer	2	2	--	--	--
Potato Grader	--	--	2	2	--
Power Saw	20	23	22	25	26
Pressure System Less than 22'	46	46	58	65	26
Pressure System Over 22'	27	30	21	22	16
Radio	100	100	100	100	78
Range	16	23	25	35	8
Refrigerator	82	89	87	92	78
Roaster	11	12	10	10	3
Sander	--	--	5	5	--
Sewing Machine	20	20	25	27	3
Soldering Iron	9	9	2	2	5
Space Heater	14	14	6	6	3
Stock Tank Deicer	2	2	--	--	--
Sump Pump	--	--	1	2	--

3-Table IV - Michigan 20 Delta - April 6, 1953

Appliance or Equipment	Alger-Delta Consumers		Upper Michigan Consumers		Alger-Delta Potential Consumers
	Presently Using	Indicated Future Use	Presently Using	Indicated Future Use	Indicated Future Use
Television Receiver	--	32	1	38	3
Toaster	87	87	88	89	66
Tool Grinder	12	13	12	14	13
Vacuum Cleaner	46	46	55	61	16
Dairy Ventilator Fan (Barn)	11	11	6	9	--
Livestock Ventilator Fan (Barn)	2	2	--	2	--
Waffle Iron	29	29	38	39	8
Washing Machine	95	95	93	94	82
Water Heater (Dairy Pour-in)	5	7	2	4	--
Water Heater (Dairy Pressure)	--	--	1	1	--
Water Heater (Pail)	--	--	--	1	--
Water Heater (House)	4	12	25	39	11
Welder	2	2	4	4	3

ECONOMIC CHARACTERISTICS

The ultimate area proposed to be served by this system will extend throughout the five counties of Alger, Delta, Menominee, Marquette and Schoolcraft. In order to provide the generalized background of economic information for this analysis, the 1945 and 1950 census data pertaining to these counties were used.

Only 18 percent of the total acreage was in farms in 1950. Approximately 43,000 acres of land were eliminated from farming between 1945 and 1950. There were 20 percent fewer farms in 1950. The average size farm in 1945 was 129 acres, and in 1949 it was 152 acres. The average value of land and buildings was \$6,637 per farm as compared to \$10,965 for the State of Michigan. In 1949, the sale of farm products averaged \$2,264 per farm as compared to \$3,044 for the State. Menominee and Delta Counties averaged \$2,400 and \$2,500, respectively, while the other three counties averaged less than \$2,000. On April 1, 1950, there were 125,021 persons in the area, a slight decrease from the 1940 population figures. Several banks are located within the served area. The five banks located in Gladstone and Escanaba have a ratio of 3.5 to 1.0 of deposits to loans. The Upper Peninsula Production Credit Association serves all of the Upper Peninsula. In 1952 they had 324 loans totaling \$1,005,000 of which \$625,000 was in the served area. The Farmers Home Administration had 40 active production loans and 5 farm ownership loans in Delta and Schoolcraft Counties with a total outstanding of \$106,000. Livestock and livestock products accounted for 75 percent of all the income received from the sale of farm products in 1949. Crops accounted for 17 percent

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and forest products 7 percent. Of the livestock and livestock products, 69 percent were dairy, 5 percent poultry and 26 percent other livestock sales. Dairy products were principally whole milk sold as market milk, and that sold to condensaries and to cheese factories. The average size dairy consisted of 9 cows in 1950. Market milk is used by the towns and cities within the served area. Stephenson has a condensary and one cheese factory. Another cheese factory is located at Rock.

Farm ownership has recently started through a transposition period. The average farm owner is of an age where he is thinking of retiring within the next 10 years. Several farmers are retiring each year. Some new owners are purchasing two of the smaller units to attain a more economical size of farm unit, especially to adjust to the present day use of farm machinery. This period resulted from the migration of Belgian, Finnish, French and other European people into Upper Michigan to work in industry. As soon as they were financially able to purchase a tract of land they did so. Gradual clearing of these lands enabled them to make a living through farming. Many acres, as shown by the census figures, have reverted back to timber. At the same time other acreages are being cleared for farming to increase the size of farm unit, according to each of the county agents' reports for the year 1951 in the served area. Tree farming exists throughout the served area. For some people this is part of their farm income. For others it is their entire farm income. These would be classed as subsistence farms. This affords additional income to many of the families that have regular employment in industry for only 8 or 9 months out of the year. At the present price of pulpwood and saw logs, their income from this classifies them as tree farmers, according to the U. S. Census definition.

Delta and Menominee Counties have larger farms and are in the higher income group. Alger, Marquette and Schoolcraft Counties have small areas devoted to farming, and the remainder of the land is in tree farms or State and National Forests.

Forty-four percent of the operators worked off their farms during 1949 with 27 percent working 100 days or more. The amount of tenancy dropped to 3 percent by 1950. Ninety percent of the farms reported having electricity, and 29 percent telephone service as of April 1, 1950. It is the appraiser's understanding that a telephone loan application is on file with REA for this area and is under study at the present time.

Marketing facilities appear adequate. Railroads and highways traverse the area. Most of the main roads are oiled and kept in reasonably good repair the year-round. Snow removal equipment is adequate to keep the roads open for winter travel.

PHYSICAL CHARACTERISTICS

The area has nearly level terrain not exceeding 400 feet in elevation. A modified marine climate exists during most of the year due to the

Michigan 20 Delta - April 6, 1953

temperatures of Lakes Superior and Michigan. Winters are not so severe as other Northern States. The modified climate tends to retard the advance of spring along the shores, and in the fall reverses the process to slow up the coming of the cold weather until the vegetation has matured and is safe from frost. The growing season ranges from 80 to 90 days in the interior to 150 days along the lake shores. Precipitation is fairly well distributed throughout the year. Summer rains are often thundershowers. Snowfall varies from 115 to 130 inches in the northern part of the served area to 30 inches in the southern part. Annual precipitation varies from 25 inches in Menominee County to 32 inches in Delta County. Extreme temperatures vary from 108° to -49° in Marquette County in the north and 106° to -30° in the south. Most of the lands are covered with timber. State-owned forest and game lands, as well as U. S. Forest Service lands, cover a large portion of the cooperative's served area (see Figure 1). The Hiawatha Forest contains 811,000 acres gross, with 469,000 acres under title to the Forest Service. This area is being cut for timber on a sustained yield basis with reforestation carried on annually. In 1951 the gross receipts from sale of stumpage and land rentals was \$96,000. In 1952 it increased to \$130,000. It is estimated the income will be lower for 1953. It is planned that in 25 years the pulpwood can be harvested at double what is being harvested now if the market will be able to use it. Mr. C. Lewis Harrison, Forest Supervisor for the Upper Michigan National Forest, indicated the timberlands owned by the paper mills and by individuals are being managed for sustained yields. Taconite, "the source of tomorrow's steel," has been located in the Marquette and Menominee Ranges and from all indications has a bright future. Iron is mined near the area and is shipped from the ore docks at Escanaba, furnishing work throughout the summer months. Hunting and fishing prevail in the forested area. A large paper mill is located near Escanaba, another at Munising. There are also several veneer plants in the area.

COMPETITIVE SOURCES OF ENERGY

Liquid petroleum gas competes with electricity at the present time. Forty-seven percent of the respondent consumers in the Alger-Delta Cooperative area indicated they were planning on using LP gas in the future. Most of the use of gas is for cooking and heating water. Wood is available in the served area and is used by many for cooking and heating water. Homes are heated almost entirely by wood, coal, and oil. The following table shows the status of LP gas among the respondents interviewed.

TABLE V

STATUS OF LP GAS USE, 94 RESPONDENTS
REPORTING IN THE SAMPLE SURVEY^{a/}
MICHIGAN 20 DELTA

Consumers' Position With Respect to Use of LP Gas	Number in Survey	Percent of Total
Not Using and Not Planning to Use	50	53
Not Using but Planning to Use	2	2
Presently Using LP Gas	42	45
Cooking	40	
Water Heating	9	
Refrigeration	1	
House Heating	4	
Total		100

a/ All served and unserved farm and nonfarm respondents indicating use of gas.

Forty-six percent of the consumers of the Upper Michigan Power and Light Company indicated they were planning on using LP gas in the future. As is true in the cooperative's area, most of the use of gas is for cooking and heating water. Homes, likewise, are almost entirely heated by wood, coal or oil. The following table shows the status of LP gas among the respondents interviewed.

TABLE VI

STATUS OF LP GAS USE, 85 RESPONDENTS
REPORTING IN THE SAMPLE SURVEY^{a/}
UPPER MICHIGAN POWER AND LIGHT COMPANY

Consumers' Position With Respect to Use of LP Gas	Number in Survey	Percent of Total
Not Using and Not Planning to Use	42	49
Not Using but Planning to Use	4	5
Presently Using LP Gas	39	46
Cooking	39	
Water Heating	11	
House Heating	4	
Chick Brooding	1	
Total		100

a/ All served farm, nonfarm, and town residential respondents indicating their status with respect to use of gas.

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STATUS OF SEASONAL CONSUMERS

The appraisal was made during February, a month when seasonals were not using their cabins. The appraiser had a chance, however, to talk to 15 owners of cabins living in Escanaba, Gladstone and Marquette concerning their present use of electrical appliances and equipment and what appliances and equipment would probably be added in the next 3 years. The general attitude was not to use electricity in excess of the minimum. Many of the users living away from the service area are located as far as Toledo, Ohio, and Detroit, Michigan. With the likelihood of construction of the Mackinac bridge in the near future, the time required to drive from Detroit and other points in Michigan to this playground area will be lessened by $1\frac{1}{2}$ to 2 hours. This is likely to increase the potential of seasonal consumers.

The present seasonal consumers use their cabins on weekends and during summer vacations. The season is from May through November. The usual use of cabins is for spring fishing, summer vacations and fall hunting. November has the highest monthly kwh usage for the cooperative, due to the hunting season for deer and bear, along with their regular year-round consumers. Although without data to substantiate the fact, the appraiser believes the tourist income is the largest single source of income to the service area. Should the 40-hour week continue, the number of potential seasonal consumers will undoubtedly increase beyond the present number already having unelectrified cabins. The number of small commercial establishments will probably increase in proportion to the number of new seasonal potentials.

A sample of the seasonal cabins shown on the unelectrified survey map was verified while traveling through the service area. It is reasonable to assume that the 1,671 potential cabins actually exist.

ANALYSIS OF FUTURE KWH CONSUMPTION

The indicated expected usage to be attained within 3 years from the time of the appraisal for the Alger-Delta Electric Cooperative will be achieved principally from increases in water heaters, cabinet freezers, ranges and milk coolers.

As revealed by the data obtained from the respondents, the average rate of consumption for farms is 73 percent of the average for the entire country as determined by REA for appliances and equipment. For nonfarms the average rate is 83 percent. The estimated annual kwh per 100 consumers is adjusted to take into account these levels of usage.

Since 1939, the average monthly farm consumption for the cooperative rose from 38 kwh to 146 kwh for 1952. This is an increase of 8 kwh in the average monthly usage, annually. Since the end of World War II in 1946, at which time electrical appliances and equipment were becoming generally

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available, the average monthly usage has increased 13 kwh per month annually. The indicated increase in the next 3 years for both farm and nonfarm residential consumers compares favorably with the actual average monthly kwh increase, considering the addition of potential consumers. We might then expect the average annual kwh for farms to increase from 146 to 165 in the next 3 years. At the same time, nonfarm residential consumers would be expected to increase from 84 to 100 kwh monthly. Seasonal consumers can be expected to increase from 23 to 30 kwh monthly in the next 3 years.

The indicated expected load to be attained within 3 years from the time of the appraisal for the Upper Michigan Power and Light Company will be achieved principally from the increased use of water heaters, ranges, cabinet freezers, television receivers and milk coolers. As revealed by the data obtained from the respondents, the average rate of consumption for farms is 64 percent of the average for the entire country as determined by REA for appliances and equipment. For nonfarms the average rate is 80 percent and for town residentials, 73 percent. The estimated annual kwh per 100 consumers is adjusted to take into account these levels of usage. No data were available to project the past trends in kwh monthly consumption. We might expect the average annual kwh for farms to increase from 196 to 235 in the next 3 years. The nonfarm residential consumers would be expected to increase from 147 to 175 kwh monthly and the town residential consumers from 146 to 185 kwh monthly.

Indications of future consumption for the cooperative are less than for the Upper Michigan Power and Light Company primarily because substantial dilution resulting from addition of large numbers of potential consumers is anticipated. To reach the increases shown above, the following specific additional kwh resulting from additions of appliances and equipment must be achieved.

TABLE VII

INDICATED AND ESTIMATED KWH USAGE FARM AND
NONFARM CONSUMERS, SERVED AND UNSERVED FOR
ALGER-DELTA COOPERATIVE ELECTRIC ASSOCIATION

Use	Indicated			Estimated Annual
	Within 3 Years	KWH		KWH
	Percent Saturation	Per 100 Consumers	Percent of Total	Per 100 Consumers
<u>Major Household Uses</u>				
Water Heaters	12	36,000	14.6	24,000
Refrigerators	85	30,600	12.4	22,000
House Lighting	100	30,000	12.1	24,000
Cabinet Freezers	24	21,600	8.7	15,000
Ranges	17	21,600	8.7	15,000
Pressure Systems	62	12,600	5.1	8,000
Radios	98	9,800	4.0	5,000
Irons	90	9,000	3.7	8,000
Television Receivers	20	7,200	2.9	5,000
Clothes Driers	7	4,900	2.0	2,500

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Use	Indicated			Estimated Annual
	Within 3 Years	Per 100	Percent	Per 100
	Percent Saturation	Consumers	of Total	Consumers
<u>Major Farm Uses</u>				
Milk Coolers	5	8,210	3.3	5,000
Hay Driers	2	7,500	3.0	5,000
Milking Machines	16	7,168	2.9	5,000
Water Heating (Dairy)	4	6,000	2.4	4,000
Livestock Watering	20	3,600	1.4	2,000
<u>Miscellaneous</u>	---	31,735	12.8	14,000
Total		247,513	100.0	163,500

Annual average estimated kwh for served and unserved farm and nonfarm consumers 3 years after the field appraisal 1,635

Monthly average estimated kwh for served and unserved farm and nonfarm consumers 3 years after the field appraisal 136

TABLE VIII

INDICATED AND ESTIMATED KWH USAGE SERVED FARM,
NONFARM AND RESIDENTIAL CONSUMERS FOR UPPER
MICHIGAN POWER AND LIGHT COMPANY

Use	Indicated			Estimated Annual
	Within 3 Years	Per 100	Percent	Per 100
	Percent Saturation	Consumers	of Total	Consumers
<u>Major Household Uses</u>				
Water Heaters	39	117,000	29.3	60,000
Ranges	35	42,000	10.5	32,000
Refrigerators	94	33,840	8.5	24,000
House Lighting	100	30,000	7.5	20,000
Cabinet Freezers	32	28,800	7.2	12,000
Pressure Systems	89	17,340	4.3	7,000
Television Receivers	38	13,680	3.4	8,000
Radios	116	11,600	2.9	7,000
Irons	98	9,800	2.4	3,500
Roasters	11	5,280	1.3	3,000

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Use	Indicated			Estimated Annual
	Within 3 Years	Per 100	Percent	KWH
	Percent Saturation	Consumers	of Total	Per 100 Consumers
<u>Major Farm Uses</u>				
Milk Coolers	9	18,450	4.6	12,000
Milking Machines	24	9,360	2.3	8,000
Water Heaters (Dairy)	3	6,300	1.6	4,000
Livestock Watering	26	4,680	1.2	3,000
Hay Drying	1	4,000	1.0	3,000
Walk-in Freezers	4	3,600	.9	2,000
<u>Miscellaneous</u>	---	<u>44,055</u>	<u>11.1</u>	<u>27,000</u>
Total		399,785	100.0	235,500

Annual average estimated kwh for served farm, nonfarm and residential consumers 3 years after the field appraisal 2,355

Monthly average estimated kwh for served farm, nonfarm and residential consumers 3 years after the field appraisal 196

Type	Percentage Distribution of Total			Investment			Available Annual		
	Private	Government	Total	Private	Government	Total	Private	Government	Total
Real Estate	100	0	100	100	0	100	100	0	100
Manufacturing	25	0	25	25	0	25	25	0	25
Transportation	3	0	3	3	0	3	3	0	3
Communication	25	0	25	25	0	25	25	0	25
Public Utilities	1	0	1	1	0	1	1	0	1
Other	4	0	4	4	0	4	4	0	4
Total	100	0	100	100	0	100	100	0	100

Investment was made in the following fields: Real Estate, Manufacturing, Transportation, Communication, Public Utilities, and Other.

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